

Cahlen Brancheau (154)

HW3
a) $A \dot{E} B$ C
 $4/15 = .267$ $7/15 = .467$

$$\frac{30}{30}$$

$$(.267 \times 100) + (.267 \times 200) + (.467 \times 300) \approx 220 \checkmark$$

$$b) \frac{[(.267 - \frac{1}{5}) \times 100] + [(.267 - \frac{1}{5}) \times 200] + [(.467 - \frac{1}{5}) \times 300]}{1 - \frac{1}{5}}$$

$$1 - \frac{1}{5}$$

$$= \boxed{187.75} \checkmark$$

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$A = \text{old}$ $B = \text{New}$

$$CPI_A = (.4 \times 2) + (.2 \times 4) + (.18 \times 4) + (.22 \times 6) = 3.64$$

$$.11 \times .3 = .12$$

$$CPI_B = \frac{(.4 - .12) \times 2 + (.2 - .12) \times 4 + (.18 \times 4) + (.22 \times 8) + (.12 \times 4)}{1 - .12}$$

$$1 - .12$$

$$= 4.36 \checkmark$$

$$CPU_A = 3.64 \times ICA \times CCT_A = 3.64$$

$$CPU_B = 4.36 \times (.88 \times ICA) \times CCT_A = \underline{3.8368}$$

$$\frac{B}{A} = \frac{3.8368}{3.64} = 1.05 \quad A \text{ is } 5\% \text{ faster} \checkmark$$

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a) ALU Loads Stores Branches

$$CPI_A = (.35 + (.25 \times 2) + (.15 \times 2) + (.25 \times 3)) = \boxed{1.975} \checkmark$$

b)

$$.35 \times .25 = .0875$$

$$CPI_B = \frac{(.35 - .0875)^{x1} + (.25 - .0875)^{x2} + (.15 \times 2) + (.25 \times 5) + (.0875 \times 1)}{1 - .0875} = \boxed{2.438} \checkmark$$

c)

$$CCT_A = 1.3 \times CCT_B$$

$$CPI_A = 1.975 \times (1.3 \times CCT_B) \times I(A) = 2.475 \checkmark$$

$$CPI_B = 2.438 \times CCT_B \times (.9125 \times I(A)) = 2.22 \checkmark$$

$$\frac{A}{B} = \frac{2.47}{2.22} = 1.11 \quad B \text{ is } 11\% \text{ faster than } A$$

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